State of Louisiana

Information Technology Enterprise Architecture

Conceptual Architecture

Version 1.0

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Introduction

This document establishes the IT Enterprise Architecture (EA), a key element of the State IT Master Plan. It will be used to facilitate rational decisions about IT priorities, projects, policies, standards, and guidelines. The information provided by the architecture is crucial for IT implementation and purchasing decisions, and provides a powerful communication tool between the Office of Information Technology and the IT community.

Goals and Vision Statement

As Louisiana state government initiates an enterprise level architecture, the goal is not just to deliver an EA that meets present needs, but to develop a framework that will enable the continuous integration and synchronization of appropriate technologies to best serve the business of state government and the citizens of Louisiana.

The vision of the Enterprise Architecture is to:

> *"Provide a single, common and cohesive framework that directs the design, construction, purchase, deployment, and management of information systems and information technology across state government."*

Conceptual Architecture

The Conceptual Architecture is the foundation framework for the state's enterprise-wide technical architecture. It provides the vision and principles for the EA and the detail component architectures, as well as high-level guidance for aligning business drivers to meet the vision of the EA. The purpose of the Conceptual Architecture and of this document is to:

- Provide an overview describing the role of the Conceptual Architecture, it's goal and vision.
- Describe the architecture principles that constitute the Conceptual Architecture.
- List and define the component architectures, that will be implemented to support the Enterprise .

Overview

The Conceptual Architecture identifies applicable EA best practices as Conceptual Architecture Principles (CAP). These CAPs provide the framework for establishing standards, guidelines, and best practices to be used in the design, acquisition, construction, deployment, and management of information resources across the state.

The collection of IT systems and resources within the state enterprise requires organization and structure if they are to be used effectively and economically. The EA approach is to view IT infrastructure in discrete layers, as urban planners view roads, water and sewage, telephone, and power systems as underlying infrastructure layers of a city; and then to organize these resources to best deliver a broad spectrum of services to its users.

Conceptual Architecture Principles

Conceptual Architecture Principles (CAP's) are high-level fundamental axioms or concepts that frame and contribute to the understanding of the Enterprise Architecture. They are derived from best practices that have been assessed for the appropriateness of the Enterprise Architecture.

The Conceptual Architecture Principles are as follows:

1. **Enterprise architecture will be built by competing industry proven, "Best of Breed" products for lowest cost**. When there is more than one solution, the best industry proven products must be competed to gain the best price.

2. **Cooperation.** The Enterprise Architecture must evolve through the cooperative efforts of it's stakeholders. This maximizes buy-in and supports the goal of ensuring that the architecture is able to interoperate within and across agencies and between agencies and their business partners. Also, IT solutions of the future will be a significant enabler of "cooperation" that will result in substantial cost savings and enhanced products.

3. **Total cost of ownership must be considered**. New technologies will not be implemented unless assured of being able to manage and support them in a cost effective manner. Also, the total costs of present and proposed alternatives must be a part of decision-making.

4. **Business and IT staff must have a common vision that values customer service.** Business units must be cognizant of the technical architecture in order to take advantage of the support and benefits that technology provides. Similarly, without understanding the business, the implementation of new technologies could severely impair business operations. The success of an enterprise-wide architecture demands a partnership between both the technical and business communities, and both must place a high value on customer service.

5. **Technical architecture must be extensible and scaleable across the enterprise.** "Extensible" means the ability to easily integrate new technology and functionality. "Scaleable" means the ability to quickly meet demands for increased performance—processing power, network connectivity, or data storage. IT systems and infrastructures must be implemented to facilitate change across the enterprise.

The potential for rapid change and maximum flexibility are enabled by adopting an infrastructure BROADER than the immediate application requirement. The rate of change may no longer allow implementation of the "best" technical solution, nor may the "best" technical solution be optimal if it does not allow sufficient flexibility in the face of a rapidly evolving environment. Technological "lock-in" should be avoided.

6. **The Enterprise Architecture must enable secure communications and appropriate protection of information and technology.** In providing for adequate security, costs and benefits should be weighed against risks. Just enough security, well managed, easily used, appropriate to the needs, and affordable is the goal.

7. **Architecture must strive to reduce integration complexity.** The complexity of integrating new processes, technologies, and systems is increasingly a major factor for driving up IT costs. The architecture must maximize innovation within its framework while minimizing the number of vendors, products and configurations in it's environment. From a design perspective, customization of the core infrastructure during system integration is strongly discouraged.

8. **Elements of the Architecture must be constructed to optimize the whole enterprise system.** The historical view that maximizing agency performance will produce optimal consumer services has unfortunately resulted in duplicate information gathering, inefficient processes, and stovepipe solutions.

9. **Enterprise-wise system concepts will apply to purchased software.** Purchased applications can strongly influence the nature and environment of an agency's technical environment. It is easier to integrate a purchased application into an adaptive enterprise environment, than to modify architecture designed around purchased applications. As purchased software is leveraged by knowledge workers it's critical that it conforms to the enterprise architecture specifications.

10. **New systems and solutions must be implemented faster.** The accelerating rate of change and shrinking cycle times requires that new applications and technical solutions (including modifications to existing systems) be implemented at a faster rate. The rate of change of technology and business requirements may no longer give I/S staff the time to fully analyze, design, and implement the "best" technical solution for a new application or system requirement. Lengthy implementations frequently result in higher costs and greater risk of failure.

Component Architectures

The Enterprise Architecture is divided into sets of related technologies referred to as Component Architectures. The purpose of a Component Architecture is to provide a combination of component-level principles, guidelines, and best practices that represent "building blocks" for the acquisition and deployment of technology by state government entities. Note: the Conceptual Architecture serves as the foundation for the Component Architectures, and ensures

that they are aligned and compatible with one another. To date, the following Component Architectures are being addressed as part of the EA.

- **Security Component** - The Security Architecture defines a framework of security principles, best practices, guidelines and technologies for enabling secure communications and the appropriate protection of information resources within state government. The security architecture includes definitions and guidelines for such things as authentication and encryption.

- **Network Component** - The Network Architecture defines a communications infrastructure model for state government. It defines the various technologies required to enable communications among government entities and their citizen and business constituents. Local Area Networks, Wide Area Networks and telecommunications facility related issues are included in this architecture.

- **Facilities Component** – The Facilities Architecture defines the physical environment in which IT resources will be housed and managed. This includes, buildings, power, physical storage, water and sewerage, and location/re-location of items and devices.

- **Platform Component** – The Platform Architecture defines the client and server computing platforms, operating systems, storage devices, and personal computing devices supported. Components of the platform domain range from enterprise class servers to workstations and hand held computing devices and the operating systems (not applications) that run on these devices.

- **Data Component** – The Data Architecture describes the logical structure of databases and the methodology used to maintain and correlate data. The data architecture provides a framework for defining responsibility for data integrity and distribution. It also defines the technical components of the software systems that support storage and retrieval of data including the types of database software that will support the applications.

- **Applications Component** – The Application Architecture defines how applications are designed and how they cooperate. Application architecture promotes common presentation standards to facilitate rapid training and implementation of new applications and functions. Good application architecture enables a high level of system integration, reuse of components and rapid deployment of applications in response to changing business requirements.

- **Enterprise Management Component** – The Enterprise Operations Management component defines how IT services will be managed from a statewide enterprise perspective. It encompasses constructing and coordinating operational functions across organizational and geographic boundaries to provide service and support for distributed and centrally managed IT assets.